ABSTRACT OF THE DISCLOSURE

A resource allocator is operable to allocate a plurality of resources among a plurality of tasks within a process system. The

5   process system is capable of executing at least one application process. The resource allocator includes a monitoring controller operable to monitor one or more characteristics associated with the at least one application process, the resources, and the tasks. The resource allocator also includes a model of the process system

10 representing mathematically the resources and the tasks and defining relationships among related ones of the resources and the tasks as a function of the at least one application process. The resource allocator further includes a resource allocation controller operable to operate the model in response to ones of the

15 monitored characteristics and allocate ones of the resources among ones of the tasks to execute the at least one application process. In addition, the resource allocator includes a graphical user interface operable to identify the resources and flows between at least some of the resources. The graphical user interface includes

20 at least one virtual queue associated with at least one of the resources and identifying one or more items to be processed by the at least one resource.